

## What is claimed is:

1. A semiconductor laser device with an oscillation  
 5 wavelength of 770 to 810 nm, comprising:
  - a semiconductor substrate of a first conductivity type;
  - a first clad layer of the first conductivity type disposed  
 on said semiconductor substrate;
  - an active layer of a quantum well structure disposed on  
 10 said first clad layer;
  - a first second-clad layer of a second conductivity type  
 disposed on said active layer;
  - a disordered region formed near a laser resonator facet by  
 introducing impurities from a surface of said first second-clad  
 15 layer into the layers including said active layer on said  
 semiconductor substrate; and
  - an optical waveguide including a second second-clad layer  
 of the second conductivity type disposed on the surface of said  
 first second-clad layer in a manner opposite to said active  
 20 layer in said disordered region across said first second-clad  
 layer, said optical waveguide extending in a resonator  
 lengthwise direction;
  - wherein if  $\lambda_{dpl}$  is assumed to denote in nm the  
 wavelength of photo luminescence generated by application of  
 25 pumped light to said disordered region and  $\lambda_{apl}$  to represent in  
 nm the wavelength of photo luminescence generated by application  
 of pumped light to said active layer, and if a blue shift amount  
 $\lambda_{bl}$  in nm is defined as equal to  $\lambda_{apl} - \lambda_{dpl}$ , then the blue  
 shift amount  $\lambda_{bl}$  meets a condition of  
 30  $\lambda_{bl} \geq 20$ .

2. A semiconductor laser device according to claim 1,



wherein, if Pcod is assumed to denote in mW a COD level of the laser device, then the blue shift amount  $\lambda$  bl in nm further meets a condition of

$$(P_{cod} - 85)/5.6 \leq \lambda \text{ bl} \leq (P_{cod} - 135.0)/1.3.$$

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3. A semiconductor laser device according to claim 1, further comprising insulating films disposed on said first second-clad layer and on sides of said optical waveguide but not over a top portion of said optical waveguide.

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4. A semiconductor laser device according to claim 2, further comprising insulating films disposed on said first second-clad layer and on sides of said optical waveguide but not over a top portion of said optical waveguide.

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5. A semiconductor laser device according to claim 1, further comprising a current blocking layer of the first conductivity type disposed so as to bury said optical waveguide on said first second-clad layer.

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6. A semiconductor laser device according to claim 2, further comprising a current blocking layer of the first conductivity type disposed so as to bury said optical waveguide on said first second-clad layer.

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7. A semiconductor laser device fabricating method including the steps of:

firstly forming a first clad layer of a first conductivity type, an active layer of a quantum well structure, and a first second-clad layer of a second conductivity type successively on a semiconductor substrate of the first conductivity type;

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secondly forming on a surface of the first second-clad



layer a mask pattern for impurity implantation having an opening in a region where a resonator facet of a semiconductor laser device is expected to be formed;

thirdly disordering the active layer near the resonator  
5 facet by introducing impurities with the mask pattern for introducing impurity used as a mask;

fourthly applying pumped light to the disordered region to generate photo luminescence therefrom, and measuring a wavelength of the photo luminescence as a basis for predicting a  
10 level of COD degradation;

fifthly forming a second second-clad layer of the second conductivity type on the surface of said first second-clad layer after removing the mask pattern;

sixthly forming on a surface of the second second-clad  
15 layer a stripe-shaped mask pattern in a manner opposed to the disordered active layer across the first and the second second-clad layer, the stripe-shaped mask pattern extending in a resonator lengthwise direction; and

seventhly forming an optical waveguide including the  
20 second second-clad layer with the stripe-shaped mask pattern used as a mask.

8. A semiconductor laser device fabricating method according to claim 7, wherein, if the semiconductor laser device  
25 has an oscillation wavelength of 770 to 810 nm; if  $\lambda_{dpl}$  is assumed to denote in nm the wavelength of photo luminescence generated by application of pumped light to the disordered region and  $\lambda_{apl}$  to represent in nm the wavelength of photo luminescence generated by application of pumped light to the  
30 active layer; and if a blue shift amount  $\lambda_{bl}$  in nm is defined as equal to  $\lambda_{apl} - \lambda_{dpl}$ , then the blue shift amount  $\lambda_{bl}$  meets a condition of



$$\lambda \text{ b1} \geq 20$$

when said fourth step is carried out.

9. A semiconductor laser device fabricating method  
 5 according to claim 8, wherein, if Pcod is assumed to denote in  
 mW a COD level of the laser device, then the blue shift amount  $\lambda$   
 b1 in nm further meets a condition of

$$(Pcod - 85)/5.6 \leq \lambda \text{ b1} \leq (Pcod - 135.0)/1.3.$$